

A Study to Observe Autonomic Parameters, Sleeping, and Eating Behavior in Patients with Vertigo

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ABSTRACT

There are various diseases associated with the malfunctioning of vestibular system. One such disease is vertigo which is the most common peripheral vestibular disorder. There is a need to understand the links between sleeping and eating behavior in patients with vertigo. The present study was undertaken to observe the autonomic parameters, sleeping, and eating behavior in patients with vertigo. The present observational study was conducted at Little Flower Hospital and Research Centre, Angamaly, Kerala, India. The study includes thirty cases of vertigo and thirty age- and gender-matched controls. The age group of the selected participants is 30–50 years. The study results strongly support earlier studies linking the autonomic parameters, sleeping, and eating behavior with vertigo. The study recommends further detailed studies in this area to understand vertigo still better way so that effective treatment protocols can be prepared.

Keywords: Eating behavior, Sleep, Vertigo, Vestibular system

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INTRODUCTION

The vestibular system is having a special status in the central nervous system. It starts functioning from the fetal life and regulates vital functions of the body. In fetal life, the vestibular system is optimally stimulated due to the movement of amniotic fluid shift while the mother is walking. The system gets its optimal stimulation when the baby is put in swing which is a universal tradition. The same optimal stimulation must be continued throughout life for homeostasis. Excessive stimulation is harmful and inadequate stimulation is of no use. There are various diseases associated with malfunctioning of the vestibular system. One such disease is vertigo which is the most common peripheral vestibular disorder.^[1] The common feature of vertigo is feeling of dizziness and sense of spinning surroundings. Usually, it is understood that vertigo is because of vestibular dysfunction. However, it can be caused due to the dysfunction of the autonomic nervous system. Poor autonomic regulation was observed in vertigo patients.^[2] Hence, the assessment of autonomic parameters is a valuable tool in the diagnosis of vertigo. It was reported that sleep quality is associated with dizziness. Poor sleep quality exaggerates dizziness.^[3] There is evidence that excess triglycerides causes harmful effects to the inner ear. It was suggested to limit intake of carbohydrates and fats in patients with dizziness.^[4] Hence, there is a need to understand the links between sleeping and eating behavior in patients with vertigo. The present study was undertaken to observe the autonomic parameters, sleeping, and eating behavior in patients with vertigo.

MATERIALS AND METHODS

Study Design

This was an observational study.

Study Setting

The study was conducted at Government Medical College and General Hospital, Anantapuramu, A.P.

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Study Population

The study includes thirty cases of vertigo and thirty age- and gender-matched controls. The age group of the selected participants is 30–50 years.

Assessment of Autonomic Parameters

Systolic and diastolic blood pressure was measured using Omron HEM 7120, fully automatic digital sphygmomanometer.

Assessment of Sleep

Sleep behavior was assessed using the insomnia severity index.^[5]

Assessment of Eating Behavior

Eating behavior was assessed using EAT-26 questionnaire.^[6]

Ethical Considerations

The study protocol was approved by the institutional human ethical committee. Informed consent was obtained from all the participants before the study.

Statistical Analysis

Data were analyzed using SPSS 20.0 software. Student's *t*-test was applied to observe the significance of the difference. A probability value less than 0.05 was considered significant.

RESULTS

The results are presented in Table 1. Systolic blood pressure was significantly higher in cases when compared with controls ($P = 0.0017$). Diastolic blood pressure was significantly higher in cases when compared with controls ($P < 0.0001$). There were significantly higher insomnia index scores in cases when compared with controls ($P < 0.0001$). There were significantly higher EAT-26 scores in cases when compared with controls ($P < 0.0001$).

DISCUSSION

The present study was undertaken to observe the autonomic parameters, sleeping, and eating behavior in patients with vertigo. Autonomic dysfunction was linked with vertigo in earlier studies. Interestingly, failure of a sympathetic system or overactivity was reported in patients with vertigo.^[7] Further, it was reported that autonomic dysfunction can be a possible cause of dizziness.^[8] It was reported that dizziness is most commonly observed in patients with blood pressure dysregulation.^[9] The present study supports earlier studies as there was significantly higher systolic and diastolic blood pressure in cases when compared with controls.

Sleeping behavior is closely associated with vertigo. It was reported that the majority of patients with vertigo were having sleep disorders.^[10] Abnormal sleep duration both short and long duration was reported in patients with vertigo.^[11] This may be due to the effect of sleep duration on the vestibular system.^[12] Further, quality of sleep is also linked with dizziness as poor quality sleep leads to the development of dizziness. Further, it was reported that sleep apnea is an independent risk factor in developing vertigo.^[3] The present study results support the earlier reports as there were higher scores of insomnia index observed in the patients with vertigo when compared with controls.

It is well known that the elders were more susceptible to vertigo. One of the possible causes described for the development of vertigo is dietary habits. Especially in the elderly food consumption is reduced and hence, no adequate nutrition to the body systems that deteriorated physiological functions.^[13] It

was reported that hyper-lipidemia and hyper-insulinemia were common features in the patients suffering from vertigo, tinnitus, and inner ear disorders.^[14] Disturbed glucose metabolism is strongly linked with the development of symptoms of vertigo.^[15] Change in the dietary pattern is the most common cause for the development of vestibule cochlear diseases.^[16] Further, the substances such as alcohol, tobacco, sugar, salt, saturated fats, and caffeine can worsen vertigo.^[17] The present study results support these views as there were higher EAT-26 scores in the cases, which explains that they are more susceptible to eating disorders. Hence, assessment of dietary habits must be considered in the diagnosis and management of vertigo.

CONCLUSION

The study results strongly support earlier studies linking the autonomic parameters, sleeping, and eating behavior with vertigo. The study recommends further detailed studies in this area to understand vertigo still better way so that effective treatment protocols can be prepared.

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Table 1: Autonomic parameters, sleeping and eating behavior in cases and controls

Parameter	Cases	Controls	P-value
Systolic blood pressure (mmHg)	142±14.55	128±18.28	0.0017*
Diastolic blood pressure (mmHg)	108±3.87	82±4.66	<0.0001***
Insomnia severity index score	23±1.72	14±3.91	<0.0001***
EAT-26 score	28±3.44	21±2.41	<0.0001***

* $P < 0.05$ is significant, ** $P < 0.01$ is significant, *** $P < 0.001$ is significant

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